OIPE
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PATENT & TRADEMARK OFFICE

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1   **Claim 1 (currently amended):** A location information

2   transmission method for reporting on-road location

3   information on a <u>first </u>digital map by an information

4   transmission system, comprising the steps of:

5   transmitting on-road location information by an

6   information provider, the on-road location information

7   including: a string of coordinates line information

8   representing a road shape of a road section ~~having a~~

9   ~~length determined depending on difficulty of shape~~

10   ~~matching~~; additional information including an information

11   item selected from a group consisting of attribute

12   information on said road section including a road

13   location of said road section and detailed information on

14   nodes in said road section;

15   receiving said on-road location information by a

16   <u>receiver having a second digital map </u>~~portable navigation~~

17   ~~apparatus~~; and

18   performing shape matching to identify said road

19   section on [[a]]<u>the second </u>digital map of the ~~portable~~

20   ~~navigation apparatus~~ <u>receiver </u>based on the string of

21   coordinates line information and the additional

22   information.

1   **Claim 2 (previously presented):** A location

2   information transmission method according to claim 1,

3   wherein a string of coordinates where coordinate data

4   indicating the positions of the nodes and interpolation

5   points included in said road section are arranged

6   sequentially is used as said string of coordinate

7   information.

1   **Claim 3 (previously presented):** A location

2   information transmission method according to claim 2,

3   wherein an interpolation point that contributes less to

4   shape matching is omitted from the interpolation points

5   included in said road section.

1   **Claim 4 (previously presented):** A location

2   information transmission method according to claim 3,

3   wherein said interpolation point is omitted from said

4   interpolation points where a change in bearing is less

5   than a predetermined angle with respect to bearing from

6   an adjacent interpolation point or node and a distance

7   from said interpolation point or node is less than a

8   predetermined distance.

1   **Claim 5 (previously presented):** A location

2   information transmission method according to claim 2,

3   wherein said string of coordinate information comprises

4   coordinate data of a member chosen from a group of nodes

5   and interpolation points included in said road section,

6   the coordinate data being represented using absolute

7   coordinates and data of members of nodes and

8   interpolation points excluding said chosen member, the

9   data being represented using relative coordinates.

1   **Claim 6 (previously presented):** A location

2   information transmission method according to claim 1,

3   wherein said additional information includes at least one

4   information item chosen from a group consisting of road

5   type code, road number, toll highway code, number of

6   traffic lanes, regulation information, road width, number

7   of connecting links to a crossing node, and connection

8   angle of each connecting link to a crossing node.

1   **Claim 7 (previously presented):** A location

2   information transmission method according to claim 6,

3   wherein said additional information includes accuracy

4   information relating to a digital map data used to

5   generate the on-road location information.

1   **Claim 8 (previously presented):** Method for

2   thinning-out a plurality of points representing a road

3   shape by an information transmission system, comprising

4   steps of:

5   providing a string of coordinates defining said

6   plurality of points;

7   determining whether the bearing deviation, d_n, of an

8   interpolation point, P_n, of said string of coordinates

9   from a preceding interpolation point, P_{n-1}, of said string

10   of coordinates is smaller than a predetermined angle, α;

11   determining whether a distance, g_n, of the

12   interpolation point, P_n, from the preceding interpolation

13   point, P_{n-1}, is shorter than a predetermined length, β;

14   and

15   omitting the interpolation point, P_n, from the string

16   of coordinates if both $d_n<\alpha$ and $g_n<\beta$ as determined in the

17   determining steps;

18   transmitting the string of coordinates from which

19   the interpolation point, P_n, is omitted from the

20   information transmission system.

1   **Claim 9 (previously presented):** The method of claim

2   8, further comprising a step of incrementing the value of

3   n by 1 and then repeating the steps of determining and

4   the step of omitting.

1   **Claim 10 (previously presented):** The method of

2   claim 8 wherein each of the points is represented using

3   relative information based on one of the plurality of

4   points.

1   **Claim 11 (currently amended):** A location

2   information transmission method according to claim 1,

3   wherein the on-road location information includes

4   relative information indicating an on-road location in

5   said road section, the method further comprising a step

6   of performing identifying the on-road location in the

7   road section using the relative information by the

8   receiver ~~portable navigation apparatus~~.

1   **Claim 12 (new):** A transmission apparatus

2   comprising:

3   a digital map;

4   an information generator that generates, based on

5   the digital map, on-road location information including:

6   a string of coordinates line information representing a

7   road shape of a road section and additional information

8   including an information item selected from a group

9   consisting of attribute information on said road section

10   including a road location of said road section and

11   detailed information on nodes in said road section; and

12   a transmitter that transmits the on-road location

13   information to a receiving apparatus having a digital map

14   different from the digital map of the transmission

15   apparatus.

16   **Claim 13 (new):** A receiving apparatus comprising:

17   a digital map;

18   a receiver that receives on-road location

19   information including: a string of coordinates line

20   information representing a road shape of a road section

21   and additional information including an information item

22   selected from a group consisting of attribute information

23   on said road section including a road location of said

24   road section and detailed information on nodes in said

25   road section from a transmission apparatus having a

26   digital map different from the digital map of the

27   receiving apparatus;

28   an identifying unit that performs shape matching to

29   identify said road section on the digital map fo the

30   receiving apparatus based on the on-road location

31   information.